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TO: Distribution

FROM: David Morris

SUBJECT: February 2009 Deep Space Network Customer Forum (DSN) Minutes

The following are the Minutes of the NASA/JPL Deep Space Network Customer Forum (DSNCF) Meeting held at JPL on February 17, 2009. The purpose of this forum is to bring together current and future customers of the Deep Space Network (DSN) with DSN Managers to communicate current and future plans and share concerns.

These minutes do not attempt to replicate the presentation material. The presentations in the bound handout book given at the RAR Meeting have been posted on the RAPS February 2009 RAR webpage at the following URL: http://rapweb.jpl.nasa.gov/RAR-RedFeb2009.html Corrections or updated versions of the presenters' materials are incorporated in the RAR presentations document. The minutes attempt to reflect discussions and any action items identified during the meeting.

The Resource Allocation Review is responsible for reviewing new or changed requirements, adopting recommendations to reduce periods of heavy contention, and for controlling changes to mission and asset requirements. It addressed updated project support requirements and proposed antenna downtime in 2010, 2011, and 2012. Specific periods of oversubscription are addressed with recommended changes to support. The presentation attachment is identical to what was presented.

Agenda

1. Welcome and Introduction.....D. Morris
2. DSN Program Office……..M. Rodrigues
3. DSN Development Operations and Services Office
   - Antenna Front End, Facilities and Infrastructure……..P. Hames
   - Project Interfaces……..S. Kurtik

4. New or Modified Project Requirements
   - ARTEMIS: A New Mission Using Themis B & C Spacecraft….M. Bester
   - GRAIL……...J. Beerer
   - JUNO……S. Levin

Break

5. DSN Resource Allocation Forecast 2010-2012…….....E. Martinez
   - Analysis & Recommendations
6. New Action Items & Summary……...D. Morris

Review Representatives

David Morris introduced the review representatives and thanked the mission representatives and schedulers for attending the RAR. The following attended:

D. Abraham	L. Fairley	E. Martinez	J. Scott
A. Andujo	C. Fatig	G. Martinez	C. Selski
B. Arroyo	J. Galedd	E. Massey	M. Slade
J. Bell	D. Gates	M. Medina	R. Stephens
R. Best	P. Hames	M. Mercado	P. Tay
R. Benson	C. Hernandez	D. Morris	R. Thomas
M. Bester	W. Hodgin	C. Myers	T. Thomas
A. Bowman	M. Holdridge	D. Ossing	C. Ward
B. Brown	J. Hunter	C. Page	F. Wasiak
S. Chhan	J. Jai	C. Parker	W. Whitman
E. Colwell	A. Johns	C. Ragan	G. Wright
O. Cuevas	A. Kniepkamp	B. Raofi	P. Xaypraseuth
D. Dillard	S. Kurtik	L. Rhoads	K. Yetter
L. Efron	S. Levin	M. Rodrigues	E. Young
R. Espinuiva	E. Luers	N. Sartwell	M. Zytkovicz

Michael Rodrigues - DSN Program Office

DSN status and plans:

- The DSN budget is eroding.
- Looking at all processes for efficiencies and cost reduction. Examples:
    - Commitments process was streamlined
    - Link operations at the complexes
- Announced new Deputy Manager Joe Statmen
- Future DSN plans call for eventual 70m retirement.
    - Stated plans for adding three new 34M antennas, two at CDSCC and one at MDSCC. Focus is on Canberra first.
    - Reduce use of 70m to extend life.
    - Decide replacement by 2015.

Peter Hames - Antenna Front End, Facilities and Infrastructure

DSN planned maintenance in the coming years

- Extended maintenance needed at all three complexes
- Depot Level Maintenance, needs time scheduled to replace old hardware
- Power upgrades at Goldstone in 2010, Canberra power upgrades are in the planning cycle
- GDSCC downtime re-plan from September 2009 to December 2010 to facilitate the power distribution work there
    - **Action item #1.**

Susan Kurtik - Project Interfaces

Key service preparation upgrades

- Addressed delivery dates of SPS D1.2, (2009-2010) and D1.3 (October, 2010)
    - During transition in 2010 the current tools will be replaced with new tools/software
- 26m Replacement status:
    - DSS-46 will be decommissioned in August 2009
    - X-band Acquisition Aid installed in each 34BWG1
    - 250W S-band transmitters installed in overseas 34HEF
- TTC Upgrades:
    - Completing 26GHz implementation in 2009 (34BWG1)
    - Data Capture & Delivery Task will replace current Ground Data Delivery subsystem (RNS, CDR)
    - SLE Transition is ongoing
    - Tracking data message and Monitor data is changing
- Spoke on New Replacement WAN rates (26-37 Mbps) as opposed to existing WAN rates (12-20 Mbps)

New or Modified Project Requirements

ARTEMIS - Manfred Bester

- Composed of two Spacecraft, THEMIS B and C, that will transition from near earth orbits to orbiting the moon
- DSN interfacing and testing is on schedule through 2009
- Initial maneuvers to begin transition occur in late 2009, mission completes in October 2012

GRAIL - Joseph Beerer

- Composed of two Spacecraft, GRAIL A and B, that will travel and orbit the moon
- Launches in September 2011 that will target the Sun-Earth L1 region in order to easily retarget the moon for Lunar Orbit Insertion on December 31, 2011 and January 1, 2012.
- Mission will map gravity on the moon using spacecraft-to-spacecraft radio links with a S and X-band link from each spacecraft to the ground.
- There are multiple periods that request continuous coverage for both spacecraft. Mission plans to impact lunar surface in early June 2012.

JUNO - Steve Levin

- Mission to Jupiter that will be solar powered.
- Launches in August 2011, a Earth swingby in 2013, and arrival at Jupiter in 2016
- While in polar orbit of Jupiter, each orbit will be support one of two basic science modes, Radiometer and Gravity during perijove. The orbit lends itself to avoid most of the harmful radiation and also allows it to map the magnetic field of Jupiter.
- At the end of the mission in late 2017, the spacecraft crashes into Jupiter

Resource Contention Summary - E. Martinez

The Events, Recommendations, and Analysis were presented to the attendees for approval of the proposed downtimes listed below:

2010 Weeks

January
Weeks 01 – 04
Recommendations accommodates MAP
MRO, MEX and M01O will be negotiated in mid-range.
Mars Program rejected all recommendations. Mars Project Representative, B. Arroyo, objected to recommendations due to uplink analysis concerns. Yet, the analysis identified oversubscription of 70M antenna needed for downlink. The uplink service is not an issue.

February
Weeks 05 – 08
Recommendations accommodates MAP
MRO, MEX and M01O will be negotiated in mid-range

March
Weeks 09 – 12
Recommendations accommodates MAP and STF
MRO, MEX and M01O will be negotiated in mid-range

April
Weeks 13 – 17
Recommendations accommodates MAP and STF
MRO, MEX and M01O will be negotiated in mid-range

May
Weeks 18 – 21
Approved extended DSS-14 downtime
Recommendations accommodates MAP and STF
MRO, MEX and M01O will be negotiated in mid-range

June
Weeks 22 – 25
Recommendations accommodates MAP and STF
MRO, MEX and M01O will be negotiated in mid-range

July
Weeks 26 – 30
Approved DSS-15 downtime (possible move pending)
Recommendations accommodates STF
MRO, MEX and M01O will be negotiated in mid-range

August

Weeks 31 – 34
No recommendations

September
Weeks 35 – 39
MRO and M01O will be negotiated in mid-range

October
Weeks 40 – 43
MRO and M01O will be negotiated in mid-range
Recommendations accommodates STF

November
Weeks 44 – 47
MRO and M01O will be negotiated in mid-range
Recommendations accommodates STF

December
Weeks 48 – 52
MRO and M01O will be negotiated in mid-range
Recommendations accommodates STF

2011 Weeks

January 01 – 04
MRO, MEX and M01O will be negotiated in mid-range

February
Weeks 05 – 08
MRO and MEX will be negotiated in mid-range.

March
Weeks 09 – 13
MRO, MEX and M01O will be negotiated in mid-range
STF at DSS-14/24, 63/54 shift to 34m to accommodate MSGR MOI and coordinate to obtain minimum requirement on the 70M during available time
MSGR accommodate DSS Maintenance in weeks 09, 10 and 13

- **Action item #2**

April
Weeks 14 – 17
MRO and MEX will be negotiated in mid-range

May
Weeks 18 – 21
MRO and MEX will be negotiated in mid-range

June
Weeks 22 – 26

No recommendations

July
Weeks 27 – 30
Approve extended DSS-63 downtime for life extension
MRO and MEX will be negotiated in mid-range

August
Weeks 31 – 34
Approve extended DSS-63 downtime for life extension
MRO, MEX and M01O will be negotiated in mid-range

September
Weeks 35 – 39
DSS approved proposed extended DSS-63 downtime for life Extension ending in week 39
DSS Maintenance reduced most activities on DSS-27,45,65,34B1 starting in week 37 and 38 per previous RAR agreement for GRAIL Launch support (1, 2)
STA agreed to recommendations
STB agreed to recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes to DSS-25,55
MRO, MEX and M01O will be negotiated in mid-range
VGR2 did not agree to recommendations
Reactivate DSS-46 for use by, ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC.
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, WIND.
Add S-Band Uplink and Downlink capability to DSS-55 for use by ACE, CHDR, GRLA,GRLB, INTG, SOHO, THB, THC, WIND.

- **Action item #3**

October
Weeks 40 – 43
MRO and MEX will be negotiated in mid-range

November
Weeks 44 – 47
MRO and MEX will be negotiated in mid-range.

December
Weeks 48 – 52
STA approves recommendations
STB approves recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
MRO, MEX and M01O will be negotiated in mid-range.
VGR2 did not agree with the recommendations
Reactivate DSS-46 for use by, ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC.
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, WIND.

Add S-Band Uplink and Downlink capability to DSS-55 for use by ACE, CHDR, GRLA,GRLB, INTG, SOHO, THB, THC, WIND.

- **Action item #3**

2012 Weeks

January
Weeks 01 – 04
STA approves recommendations
STB approves recommendations
MRO, MEX and M01O will be negotiated in mid-range
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
VGR2 did not agree with the recommendations
Reactivate DSS-46 for use by, ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC.
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, WIND.
Add S-Band Uplink and Downlink capability to DSS-55 for use by ACE, CHDR, GRLA,GRLB, INTG, SOHO, THB, THC, WIND.

- **Action item #3**

February
Weeks 05 – 08
No objections to approve proposed DSS-43 downtime for life extension
STA approved recommendations
STB approved recommendations
SOHO approved recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
MRO and M01O will be negotiated in mid-range
VGR2 does not agree to recommendations
Reactivate DSS-46 for use by, ACE, CHDR, GRLA, GRLB, SOHO, THB, THC.
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, WIND.
Add S-Band Uplink and Downlink capability to DSS-55 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, WIND.

- **Action item # 3**

March
Weeks 09 – 13
Approved DSS-25 proposed downtime for AZ Track Replacement
Approved DSS-43 proposed downtime for life extension
STA approved recommendations
STB approved recommendations
SOHO approved recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
MRO and M01O will be negotiated in mid-range

VGR2 does not agree to recommendations
Reactivate DSS-46 for use by ACE, CHDR, GRLA,GRLA,SOHO,THB,THC
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA,GRLB,INTG, SOHO, THB, THC and WIND
Add Uplink and downlink capability to DSS-55 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, and WIND

- **Action item #3**

April
Weeks 14 – 17
Approved DSS-25 proposed downtime for AZ Track Replacement
Approved DSS-43 proposed downtime for life extension
STA approved recommendations
STB approved recommendations
SOHO agrees to recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
MRO and M01O will be negotiated in mid-range
VGR2 did not agree with the recommendations
Reactivate DSS-46 for use by ACE, CHDR, GRLA,GRLA,SOHO,THB,THC
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA,GRLB,INTG, SOHO, THB, THC and WIND
Add Uplink and downlink capability to DSS-55 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, and WIND

- **Action item #3**

May
Weeks 18 – 22
Approved DSS-25 proposed downtime for AZ Track Replacement
Approved DSS-43 proposed downtime for life extension
STA approved recommendations
STB approved recommendations
SOHO agrees to recommendations
MSGR Prime Science Move 2 of 12 passes at DSS-25,34,55 to DSS-34,45 and move remaining passes toDSS-25,55
MRO and M01O will be negotiated in mid-range
VGR2 did not agree with the recommendations
Reactivate DSS-46 for use by ACE, CHDR, GRLA, GRLA, SOHO, THB, and THC
Add S-Band Uplink capability to DSS-15 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC and WIND
Add Uplink and downlink capability to DSS-55 for use by ACE, CHDR, GRLA, GRLB, INTG, SOHO, THB, THC, and WIND

- **Action item #3**

June
Weeks 23 – 26
MRO and MEX will be negotiated in mid-range

July

Weeks 09 – 13
ACE move 3.5 hour passes from DSS-27,65,34B1 to DSS-27,65 and 1-hour passes from DSS-34,45 to DSS-45
MRO, MEX and M01O will be negotiated in mid-range
VGR2 does not agree with recommendations

August
Weeks 31 – 35
Approved DSS proposed DSS-26 downtime for Azimuth Track Replacement beginning in week 35
MRO, MEX and M01O will be negotiated in mid-range

September
Weeks 36 – 39
Approved DSS proposed DSS-26 downtime for Azimuth Track Replacement
MRO, MEX and M01O will be negotiated in mid-range

October
Weeks 40 – 43
Approved DSS proposed DSS-26 downtime for Azimuth Track Replacement
MRO, MEX and M01O will be negotiated in mid-range

November
Weeks 44 – 48
Approved DSS proposed DSS-26 downtime for Azimuth Track Replacement ending in week 44
MRO, MEX and M01O will be negotiated in mid-range

December
Weeks 49 – 52
MRO, MEX and M01O will be negotiated in mid-range

Action Items:

1) Coordinate GDSCC Downtime Replan by the March JURAP. If DSS-14 Downtime is delayed, add Grouting Downtimes in 2009 and 2010. Due: 3/19/2009 Assigned to: Donna Dillard
    a. DSS-14 Depot Level Maintenance. Try to move this activity from Oct-09 to start and finish prior to the Epoxi encounter in November 2010. Need 7.5 months or more.
    b. DSS-24 Painting in 2010. Try to move this activity back to the September - October 2009 period.
    c. DSS-15 Pintle Bearing Replacement Downtime. Try to move this to 8-9 weeks between Nov-09 and Feb-10.
    d. DSS-25 Ka-band Transmitter in 2010. Shift it to begin after DSS-14 Return to Service without impacting Epoxi Encounter in November-10

2) Messenger Mercury Orbit Insertion in March 2011 requests extensive 70M support.

Messenger is validating their timeline and needs for this support. If this support is needed, then both DSN Maintenance needs to coordinate their work and the Mars Missions (Odyssey, MRO and MEX) need to accommodate Messenger (effectively delete) their request for this month. Due: 4/16/2009 Assigned to: David Morris

3) Propose to DSN management an augmentation strategy to support GRAIL's updated support requests. Specific request is to augment DSS-15 with S-band transmitter, temporarily reactivate DSS-46 and add S-band to DSS-55. Funding is TBD. Due: 3/19/2009 Assigned to: D. Morris/ T. Pham

Closing Remarks – D. Morris

David Morris thanked everyone for his or her participation and cooperation.
All Resource Analysis Team (RAT) Recommendations for the above proposed downtimes and contention were accepted during and subsequent to the February 17, 2009 RAR. *Please refer to the final RAR Redbook Final V2.0 located on the RAPweb.* http://rapweb.jpl.nasa.gov/RAR-RedFeb2009.html